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Ohio Economic Trends Review

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The *Ohio Economic Trends Review* is funded by the Urban University Program, which focuses the talents and resources of the state's urban universities on the revitalization efforts of our urban communities. The Ohio General Assembly established the program in 1979 through the Ohio Board of Regents.

The Urban Center at Cleveland State University's College of Urban Affairs was created as a model for university/community linkage efforts. The seven other Ohio urban universities participating in the Urban University Program include the University of Akron, the University of Cincinnati, Kent State University, Ohio State University, the University of Toledo, Wright State University, and Youngstown State University.

The *Ohio Economic Trends Review* is produced by the Fiscal Futures Service of the Cleveland State University College of Urban Affairs and is edited by a Board of Editors. The views expressed are those of the individual authors, and do not necessarily reflect official positions of the Fiscal Futures Service. The authors will be glad to receive comments about their articles.

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Message from the College of Urban Affairs

The Urban Center is proud to share this inaugural issue of the *Ohio Economic Trends Review* with you. It is a product of the Fiscal Futures Service, a unit of The Urban Center in The College of Urban Affairs at Cleveland State University. The Urban Center is a part of the state's Urban University Program operated under the auspices of the Ohio Board of Regents and through special funding provided by the Ohio General Assembly. The Fiscal Futures Service is a recent addition to the programs of the Center and was established to specialize in providing and encouraging linkages between the university and state and local public finance officials.

The College of Urban Affairs is committed to extending its education, training, technical assistance, and research and data development capabilities to the community. Its function is to develop and train scholars and practitioners and provide a neutral forum for the exchange of ideas and information as a means of promoting a better understanding of issues and improved analysis of choices facing urban areas. It is particularly in the context of this responsibility that the Fiscal Futures Service was formed and this publication launched. If it answers the need we believe exists, it will continue on a quarterly basis.

The Fiscal Futures Service engages in the presentation of seminars and workshops on financial topics such as revenue forecasting and the use of microcomputers in budgeting. It also issues a bi-monthly newsletter, *Urban Fiscal Ledger*, which includes articles by public finance practitioners. There is a column, *Budget Bytes*, which appears in the publication, and is also issued separately from time to time, which reports on state-level financial issues. The service is also engaged in research topics and a series of occasional papers are planned for the future.

This new publication is a continuation of the work of the service in linking the state's financial community. In the belief that there is a direct correlation between local, regional and state economic development and public finance the new *Review* will present articles analyzing that connection. This issue presents an economic forecast for six of the metropolitan regions of the state. Utilizing its distinguished Board of Contributing Editors, consisting of academic and non-academic economists and finance experts, there is a section devoted to speculation on the economic expectations for 1985. Future issues will include data and analysis of leading and coincidental economic indicators in an effort to assist in identifying the important turning points in the economy which affect types and levels of revenues and expenditures of governments and business.

It is our sincere hope that this kind of information, provided on a regular basis, will be of assistance to individuals in the public and private sectors engaged in financial and economic planning. We welcome your thoughts and comments for future issues.

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The Urban Center

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Using Economic Indicators in the Budgetary Decision-Making Process /7

An economic indicator is a variable which provides information about another economic variable. If properly constructed, the indicator can be used to predict changes in a related economic variable. In this article, James P. Lesage and Michael Magura demonstrate how indicators work and how they can be used by local government jurisdictions for revenue and expenditure forecasting. The authors demonstrate the process of determining economic relationships and applying those relationships to forecasting payroll receipts. The appendices display tabular and graphic data from the Ohio Department of Development for each Standard Metropolitan Statistical Area (SMSA) and the state.

Ohio Regional Forecasts /21

The theory exists that there is an "Ohio Economy." In reality, the statewide economy is an aggregation of eight separate regional economies, six of which are presented here. As can be seen in the data and graphs in the appendices to the article "Using Economic Indicators in the Budgetary Decision-Making Process," the paths of the economies of the state's SMSAs have differed greatly, especially during the recent recession. To address these differences, economists from around the state, mostly from major universities, have put together brief outlooks for their local economies in calendar year 1985.

Ohio's Changing Economy /25

Since 1978, the economy of Ohio has undergone some dramatic changes. The shift from a heavy manufacturing base to a high-technology and service base has not been easy. In this article, four Cleveland State University scholars examine some of these economic changes and what their effects have been. How Ohio has compared to other parts of the country in the shift from manufacturing to service employment is examined in greater detail, as is the shift from heavy manufacturing to high technology.

Using Economic Indicators in the Budgetary Decision-Making Process

*James P. Lesage and Michael Magura**

Introduction

Budget officers frequently need to assess future changes in economic conditions because such changes directly affect both revenues and expenditures. Since the future is not known with certainty, forecasts of future economic conditions need to be made. These can be obtained by using a variety of statistical forecasting techniques or acquiring information about variables which are good indicators of future economic changes.

This article discusses economic indicators and describes how they can be used by individuals concerned with financial and budgetary decisions. The discussion proceeds by first defining what is meant by economic indicators. Some graphical illustrations of how economic indicators can characterize past, present, or future economic conditions are presented. Next, an example of the use of leading indicators in generating a naive forecast of tax revenue for a large, Ohio, metropolitan area is presented. Finally, 1985 forecasts of the economic indicators published by the Ohio Department of Development (ODOD) are presented to assist policy makers in assessing future changes in variables of interest to them.

Economic Indicators

An economic indicator can be defined as a variable which provides information about another economic variable. The indicator provides information in the sense that variations in the indicator are systematically related to another variable and, therefore, knowing variations in the indicator can assist in knowing about variations in the other variable.

This systematic relationship can be contemporaneous, lagging, or leading. That is, variations in the economic indicator can occur at the same point in time as the other variable, after variations in the other variable, or prior to variations in the other variable. These types of indicators are referred to as coincident, lagging, and leading economic indicators, respectively.

Coincident and leading indicators can be of particular interest to policy makers. Coincident indicators are important because, at times, information of interest may not be available whereas that of a coincident indicator may. In this case the coincident indicator can be used as a proxy measure. Leading indicators are important because movements in these variables can be used to forecast movements in the variables of interest. Leading indicators are especially useful in anticipating turnarounds.

Although economic indicators can be quite important, there are two difficulties which should be noted. First, it can be quite difficult to identify appropriate economic indicators for the variable of interest. Sound theory or intuition is required to determine which variables are good indicators of another variable. For example, since construction normally requires a permit prior to the initiation of a project, intuition tells us that the number or value of authorized permits would be a good indicator of construction activity. A second difficulty with economic indicators is that, although they are systematically related to other variables, they are not necessarily related in a precise fashion. That is, although we would expect that increases in the number of permits should lead increases in construction activity, the increases in construction activity need not always occur precisely the same time in the future. There may be other factors which also impact on the level of construction activity.

As an example, let us consider the situation of a budget officer for a large Ohio city. If a large part of the city's tax revenues are obtained from the payroll tax,

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knowing the movements in the total payroll of the metropolitan area can help explain variations in city payroll tax receipts. We would say in this case that total payroll in the SMSA would be a good coincident indicator of local government payroll tax receipts.

Payroll, in turn, is related to other variables. Our economic intuition tells us that payroll would be related to wages paid, hours worked, number of employed, retail sales, and so forth. More specifically, we might expect that as sales increase, firms, after some lag, increase the number of hours worked. If the sales increase persists, employment is finally increased. Payroll, then, would increase at first with increases in hours worked arising from the increased sales and then with increases in employment. However, payroll only increases with some lag after the increase in sales. We could thus view sales as a leading indicator of hours worked, employment, and payroll because variations in sales precede those of the other variables. Hours worked, we might expect, would be fairly coincident with payroll whereas employment would lag payroll, since initial changes in payroll would come from changes in hours.

Figures 1A and 1B illustrate these relationships using quarterly data for the Cleveland SMSA. The raw data for the two Figures were available from the Ohio Department of Development (ODOD) for the period 1976 through the first quarter of 1984 and were extended through 1985 using a forecast technique to be described below. The data, as published by ODOD, are deflated and deseasonalized. The quarterly magnitudes for each series were divided by the value of that series in the first quarter of 1976 to form an index so that the various series would be the same order of magnitude. Further, a five quarter moving average was taken of each series in order to smooth out the quarter-to-quarter fluctuations.

Chart 1a of Figure 1 indicates that Cleveland retail sales are, as expected, a leading indicator of the total Cleveland SMSA payroll. (Vertical reference lines at peaks and troughs have been drawn.) A peak in sales occurred in the third quarter of 1978 (1978Q3), one quarter prior to peak in payroll in 1978Q4. A trough in sales occurred in 1982Q2, four quarters prior to the trough in payroll in 1983Q2. Note, also, the slight upturn in retail sales in 1980Q4 which led to a flattening of payroll in the following quarter.

On average, these peaks and troughs in sales occur 2.5 quarters prior to the peaks and troughs in payroll.

Chart 1b shows that employment is a lagging indicator of payroll. Payroll peaks in 1978Q4 while employment peaks two quarters later in 1979Q2. A trough in payroll occurs in 1983Q2, whereas the trough in employment occurs three quarters later in 1984Q1.

Using Economic Indicators

As indicated above, leading indicators can be useful to budget officers in forecasting revenue or expenditure magnitudes. An example is given here to suggest how one might employ leading indicator relationships to obtain a naive forecast.

Figure 1A

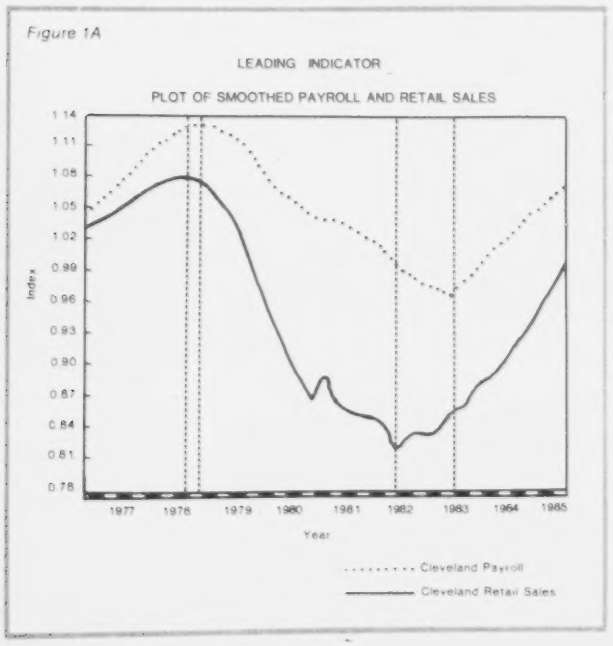
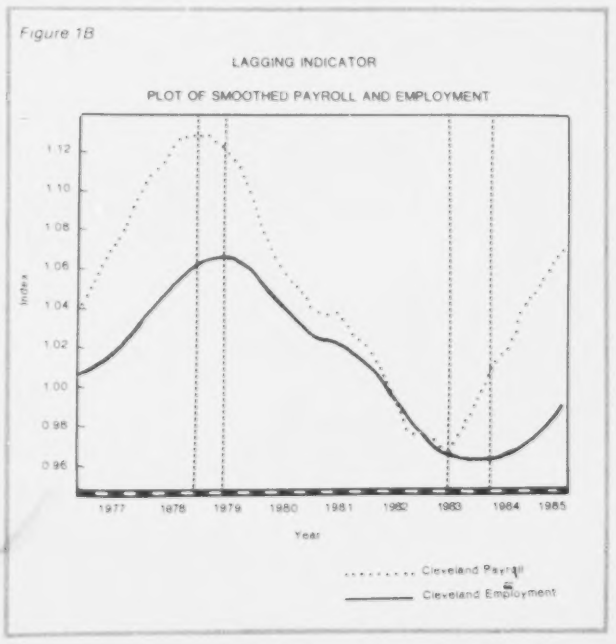


Figure 1B

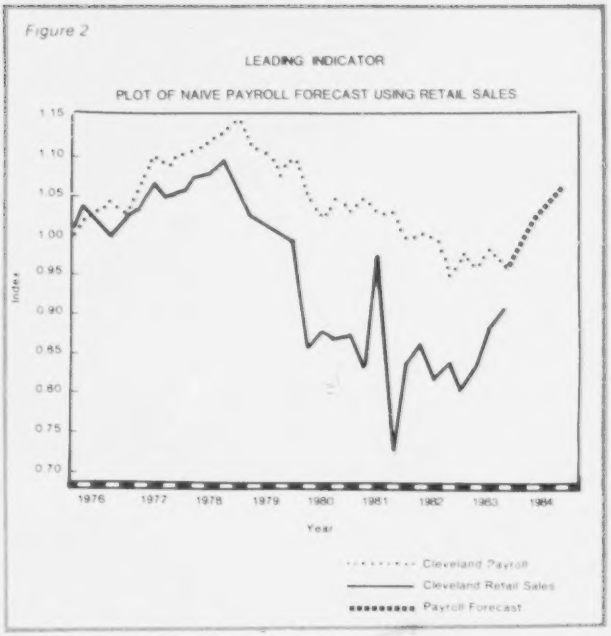


The first step in utilizing economic indicators to forecast is the identification stage. Here, knowledge of the factors which affect revenue or expenditure magnitudes is vital. A budget officer must use theory or intuition to isolate those variables which are leading indicator candidates. As we have seen, payroll, from which tax revenues are directly derived, has retail sales as one leading indicator. Additional candidates might be new orders, net business formation, and so forth. A good source of potential candidates and the data is *Business Conditions Digest*. This monthly, U.S. Department of Commerce publication presents national data on a large number of variables which have been identified as leading, lagging, or coincident indicators. Similarly, ODOD publishes *Ohio Economic Indicators Quarterly*. This publication presents information on a number of economic indicators for the eight largest metro areas in Ohio as well as those for the state as a whole.

The next part of the identification stage requires that the potential candidates be classified as leading, coincident, or lagging indicators. Although more sophisticated techniques are available, the simplest procedure would be to plot the variable of interest and the candidate indicators. Converting the data to an index form and smoothing it by using a moving average, as we have done, can be quite helpful. Here, one attempts to ascertain the leads or lags between the series.

Once leading indicators have been chosen, the final step would be the forecast stage. As an illustration, we have again chosen the city of Cleveland. Assume that the budget officer in Cleveland knows that the payroll tax revenue of the city is closely related to the level of payroll. He consults ODOD publications and obtains quarterly data for payroll in the Cleveland metro area and that for a number of potential leading indicators. Following procedures similar to those outlined above, he identifies retail sales in Cleveland as a good leading indicator. Figure 2 presents total payroll for Cleveland from 1976 through 1983 in index form as the red line. Retail sales, also in index form, are plotted as the blue line. Note that Figure 2 does not present the data in moving average terms to facilitate the calculation of the magnitude of the payroll forecast. Recognizing that retail sales lead payroll by an average 2.5 quarters (recall Figure 1), the budget officer would extend (forecast) the payroll line through 1984 based upon movements in retail sales over the previous 2 or 3 quarters. Since retail sales were increasing throughout 1983, the forecast would be the line shown as the dashed in Figure 2. Note that what is being done in Figure 2 to obtain the forecast is to use the observed relationship between retail sales and payroll over past quarters and to extrapolate it into the future. This technique is, of course, somewhat imprecise. However, it does represent an inexpensive and relatively easy procedure to use to identify general movements and to signal turnarounds in the variable of interest.

Figure 2



Forecasts of Economic Indicators

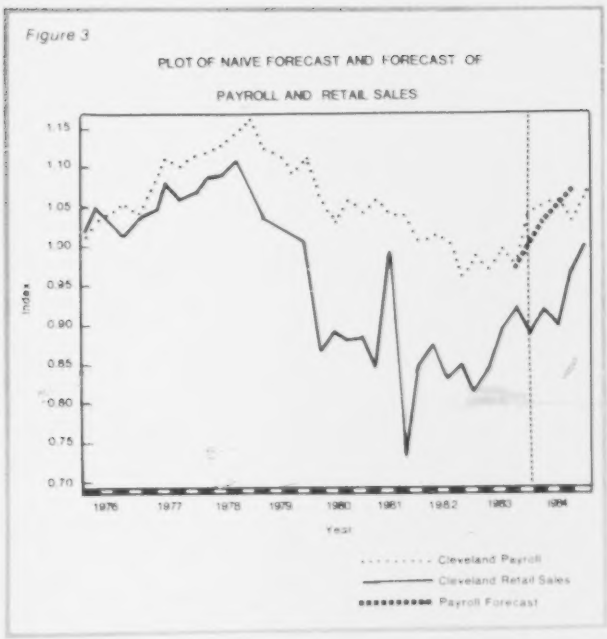
Forecasts of a variable of interest to a budget officer, such as payroll tax revenues, need to be made in a timely fashion. Unfortunately, data for economic indicators, such as those compiled by ODOD, are published only with a lag. For example, at this writing the most recent figure for the ODOD indicators is 1984Q1.

For this reason we have constructed a vector auto-regressive (VAR) econometric model to forecast the indicators published by ODOD[1]. With this model we have forecast the six economic indicators for each of the eight largest metro areas in Ohio as well as those for the state as a whole. These forecasts, along with historical data from 1976Q1, are presented in the Data Appendix, Tables 1 through 9. Each series has been converted to an index with a base of 1976Q1. This should facilitate their use in a replication of the procedures described above. We anticipate that these forecasts will be updated in future issues of this journal.

In order to indicate the usefulness of the naive forecasting technique described in the previous section, Figure 3 compares the naive forecast for the Cleveland metro area presented in Figure 2 with the actual value for

[1] *Simply put, a VAR model is a time-series model in which the dependent variable is related to its own past values as well as past values of other independent variables. Additional information about the model is available from the authors upon request.*

Figure 3



1984Q1 and the more sophisticated forecast from the VAR model. The vertical reference line at 1984Q1 demarcates the actual, historical data from the forecast data. Again, payroll, in index form, is presented as the red line; retail sales, as the blue line; and, the naive forecast, as the dashed green line. Note that the naive forecast values are below the actual and sophisticated forecast values for two quarters, quite close for one quarter, and above for one quarter. On balance, the naive forecast characterizes the actual and sophisticated forecast values quite well.

Concluding Remarks

Economic indicators are widely used by policy makers in assessing future changes in economic conditions. This article has discussed what economic indicators are and has described how indicators can be used in a rather simple fashion to forecast variables which might be of interest to budget officers. Also, forecasts of ODOD economic indicators have been presented in the hope that they will provide budget officers with up-to-date to enable them to make timely forecasts.

Although the techniques described here can prove very useful, the simple approach to the application of economic indicators should not be viewed as a substitute for more sophisticated econometric forecasting. Rather, it should be construed as merely an additional piece of information in the budgetary decision-making process. Further, some of the difficulties with the approach suggested here should be kept in mind. First, appropriate indicators may be difficult to define. Second, the relationship between an indicator and a variable of interest is usually not a very precise one. Finally, because history does not always repeat itself exactly, a certain degree of error is to be expected. If these cautions are kept in mind, the application of the techniques described here can prove to be a useful and simple addition to the budgetary decision-making process.

APPENDICES

Each of the nine appendices contains three items. The first is a table of both historical data and forecasts for five economic indicators. The data are in the form of indices, with 1976, quarter one, equal to one. With the exception of employment, the indices are both seasonably adjusted and adjusted for inflation over time.

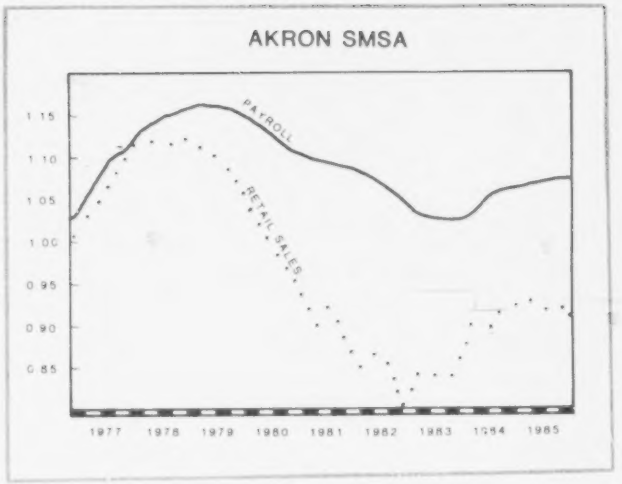
The second item is the nominal value of each economic indicator for the first quarter of 1976. This allows the reader to calculate the value of an indicator at any point in time. It would be done by taking the value in 1976, quarter one, and multiplying it by the corresponding index value from the table. For instance, to calculate employment in Akron for 1985-1, one would take the employment index from the table in Appendix 1 (1.039) and multiply it by the employment level at 1976-1 (250,060) to come up with the forecast of 259,812.

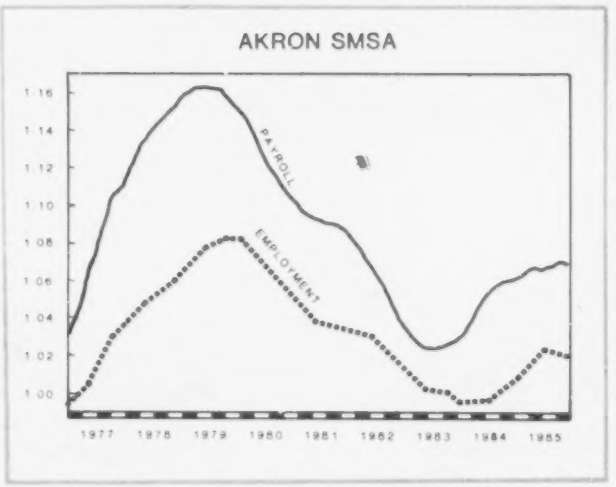
The final item consists of two graphs which are identical to Figures 1a and 1b in the text. The data points will not exactly match those in the tables because of a smoothing technique used on the data. The use of such a technique helps to show the relationships among the variables. The method of smoothing used is a five quarter moving average. That is, the value of the first point in each graph 1977-1, is actually the average of the values of 1976-1, 1976-2, 1976-3, 1976-4 and 1977-1. The next point is the average of 1976-2, 1976-3, 1976-4, 1977-1 and 1977-2. The last point, using this progression, is 1985-4.

Appendix 1
Akron SMSA

Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	949	1.020	1.007	967	975
1976-3	1.195	953	993	974	972
1976-4	1.449	995	1.104	1.022	1.005
1977-1	1.890	1.031	1.041	993	1.015
1977-2	2.068	1.112	1.109	1.020	1.034
1977-3	1.864	1.156	1.142	1.020	1.045
1977-4	1.398	1.072	1.128	1.061	1.041
1978-1	1.890	1.138	1.139	1.148	1.048
1978-2	1.814	1.111	1.154	1.166	1.063
1978-3	1.814	1.109	1.157	1.162	1.066
1978-4	1.864	1.143	1.171	1.206	1.069
1979-1	1.297	1.089	1.180	1.122	1.084
1979-2	2.025	1.092	1.153	948	1.086
1979-3	1.305	1.062	1.153	961	1.089
1979-4	1.093	1.036	1.134	839	1.087
1980-1	797	1.004	1.135	789	1.068
1980-2	695	899	1.100	740	1.050
1980-3	805	935	1.086	717	1.041
1980-4	1.076	958	1.100	676	1.039
1981-1	678	877	1.086	630	1.033
1981-2	619	826	1.100	658	1.038
1981-3	483	1.014	1.084	623	1.039
1981-4	322	705	1.073	652	1.032
1982-1	347	817	1.051	663	1.026
1982-2	305	953	1.044	671	1.015
1982-3	525	781	1.032	609	1.012
1982-4	542	755	1.013	662	992
1983-1	746	897	1.009	657	997
1983-2	788	817	1.020	679	994
1983-3	559	937	1.054	619	1.009
1983-4	780	880	1.044	650	991
1984-1	665	972	1.084	691	994
FORECAST STARTS HERE					
1984-2	991	868	1.061	739	996
1984-3	967	936	1.058	775	1.020
1984-4	1.000	957	1.057	733	1.040
1985-1	769	904	1.077	727	1.039
1985-2	579	909	1.081	700	1.018
1985-3	624	886	1.078	751	998
1985-4	986	901	1.065	798	1.002
Nominal Values					
1976-1	14.585	175.0	423.986	146.776	250.060





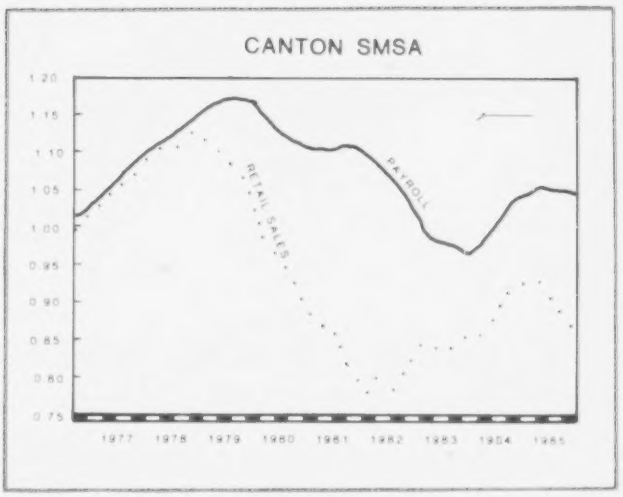
Appendix 2
Canton SMSA

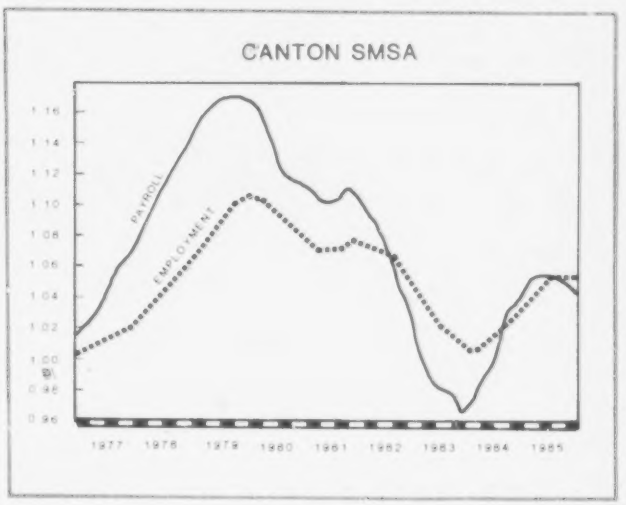
Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	1.402	.989	1.008	1.021	.996
1976-3	1.620	.993	1.024	.946	1.012
1976-4	1.804	1.011	1.033	.985	1.008
1977-1	2.380	1.001	1.009	.954	1.003
1977-2	2.478	1.009	1.043	.975	1.016
1977-3	2.413	1.082	1.085	.924	1.023
1977-4	2.402	1.075	1.104	.970	1.036
1978-1	2.380	1.097	1.106	.994	1.042
1978-2	2.457	1.136	1.117	1.017	1.056
1978-3	2.576	1.127	1.137	.950	1.063
1978-4	2.120	1.090	1.159	.997	1.079
1979-1	2.043	1.180	1.194	.995	1.098
1979-2	2.348	1.049	1.182	1.011	1.105
1979-3	1.696	1.046	1.173	.946	1.117
1979-4	1.880	1.044	1.140	.957	1.108
1980-1	1.283	.965	1.162	.910	1.100
1980-2	.663	.830	1.120	.843	1.084
1980-3	1.315	.921	1.062	.776	1.052
1980-4	1.185	.924	1.100	.847	1.072
1981-1	1.283	.817	1.117	.779	1.077
1981-2	1.043	.867	1.118	.741	1.077
1981-3	.609	.767	1.108	.767	1.079
1981-4	.674	.670	1.119	.864	1.078
1982-1	.424	.809	1.044	.773	1.064
1982-2	.446	.882	1.037	.746	1.054
1982-3	.902	.813	1.024	.707	1.047
1982-4	.522	.893	.971	.804	1.009
1983-1	.728	.823	.957	.843	1.010
1983-2	.891	.789	.934	.842	1.008
1983-3	.837	.882	1.009	.801	1.014
1983-4	.641	.884	.965	.901	1.000
1984-1	.562	.906	1.043	.867	1.005
FORECAST STARTS HERE					
1984-2	.907	.952	1.061	.912	1.051
1984-3	1.204	.943	1.069	.843	1.055
1984-4	.557	.950	1.055	.857	1.065
1985-1	.468	.888	1.050	.808	1.048
1985-2	.427	.812	1.038	.857	1.051
1985-3	.610	.809	1.045	.844	1.050
1985-4	.803	.837	1.037	.885	1.057

Nominal Values

1976-1	6.716	126.0	269.505	92.841	145.883

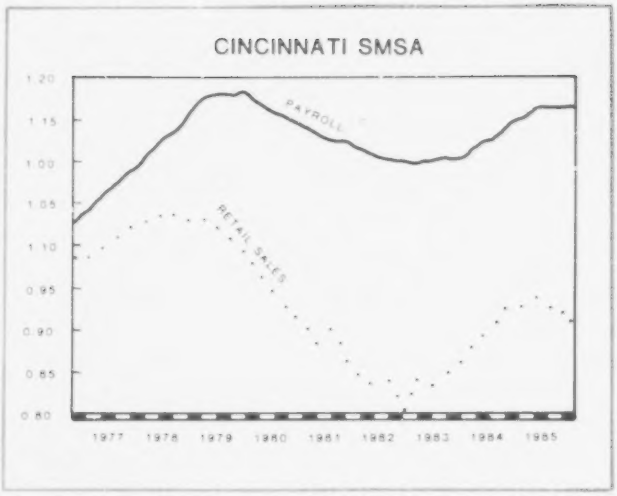


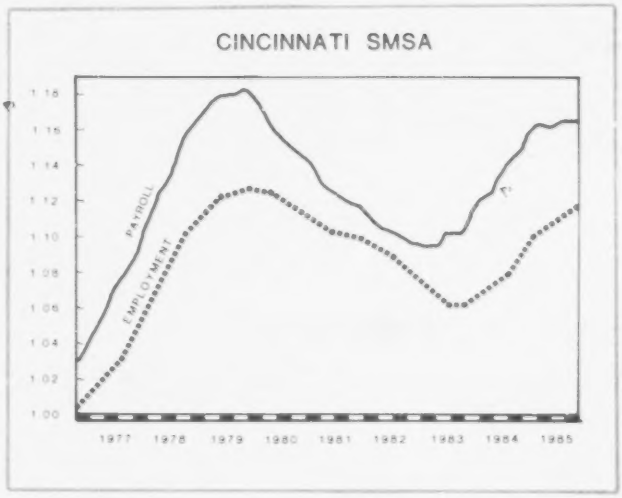


Appendix 3
Cincinnati SMSA

Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	.799	976	1.022	987	1.000
1976-3	799	977	1.026	996	1.003
1976-4	1.097	949	1.063	1.008	1.005
1977-1	1.060	1.015	1.031	1.027	1.019
1977-2	1.179	1.008	1.067	1.062	1.032
1977-3	1.351	1.026	1.106	1.075	1.045
1977-4	1.067	1.039	1.103	1.092	1.052
1978-1	1.433	1.006	1.121	1.223	1.073
1978-2	1.336	1.051	1.143	1.209	1.095
1978-3	1.410	1.047	1.160	1.164	1.111
1978-4	1.112	1.029	1.178	1.150	1.119
1979-1	1.149	1.012	1.203	1.153	1.120
1979-2	1.373	1.012	1.181	1.120	1.123
1979-3	970	997	1.170	1.083	1.130
1979-4	1.179	986	1.161	1.055	1.133
1980-1	642	938	1.191	1.013	1.129
1980-2	433	882	1.136	946	1.115
1980-3	776	879	1.126	905	1.104
1980-4	888	932	1.136	949	1.105
1981-1	634	902	1.122	874	1.107
1981-2	560	802	1.127	844	1.102
1981-3	373	991	1.109	601	1.098
1981-4	276	679	1.112	856	1.095
1982-1	448	824	1.087	870	1.088
1982-2	306	854	1.092	844	1.084
1982-3	328	836	1.112	850	1.082
1982-4	478	817	1.084	854	1.058
1983-1	716	870	1.104	911	1.057
1983-2	567	796	1.085	941	1.056
1983-3	761	937	1.131	958	1.060
1983-4	604	888	1.110	1.031	1.072
1984-1	690	950	1.170	1.050	1.083
FORECAST STARTS HERE					
1984-2	862	923	1.141	1.023	1.090
1984-3	816	955	1.164	1.004	1.101
1984-4	926	925	1.168	1.039	1.110
1985-1	700	930	1.178	1.030	1.117
1985-2	805	899	1.160	980	1.117
1985-3	719	895	1.159	940	1.121
1985-4	621	884	1.160	940	1.119
Nominal Values					
1976-1	43.183	341.4	866.394	358.507	539.721

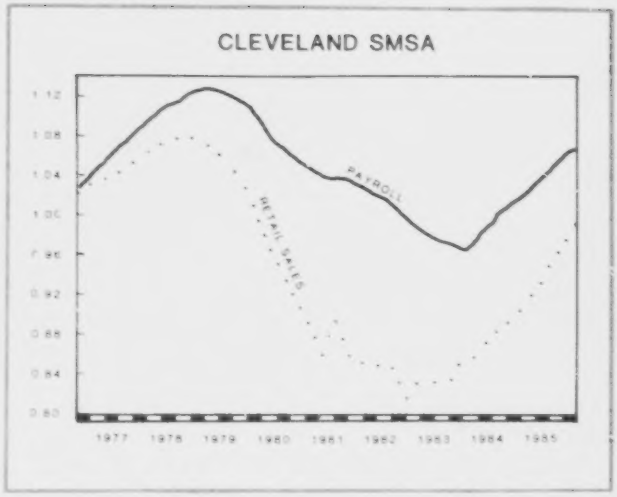


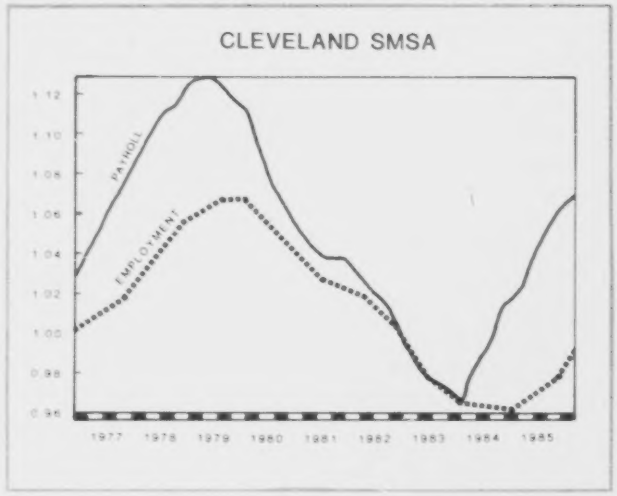


Appendix 4
Cleveland SMSA

Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	886	1.047	1.026	927	1.001
1976-3	879	1.026	1.036	937	1.001
1976-4	1.100	1.009	1.049	997	1.003
1977-1	1.200	1.031	1.033	931	1.008
1977-2	1.207	1.044	1.067	917	1.016
1977-3	1.414	1.077	1.104	950	1.025
1977-4	1.171	1.056	1.097	949	1.030
1978-1	1.336	1.062	1.109	984	1.038
1978-2	1.364	1.083	1.114	995	1.054
1978-3	1.157	1.087	1.125	985	1.057
1978-4	1.143	1.101	1.135	955	1.067
1979-1	1.050	1.062	1.154	952	1.068
1979-2	1.136	1.032	1.117	943	1.067
1979-3	800	1.020	1.109	971	1.072
1979-4	743	1.012	1.084	925	1.064
1980-1	464	992	1.104	903	1.063
1980-2	286	859	1.052	805	1.039
1980-3	450	883	1.024	783	1.023
1980-4	721	875	1.049	787	1.031
1981-1	400	878	1.034	739	1.026
1981-2	450	834	1.049	708	1.025
1981-3	393	983	1.032	731	1.021
1981-4	229	723	1.030	746	1.016
1982-1	214	838	998	793	1.008
1982-2	243	866	1.002	804	1.001
1982-3	229	820	999	874	990
1982-4	307	839	950	888	969
1983-1	521	803	971	893	963
1983-2	514	832	962	871	963
1983-3	600	881	983	905	961
1983-4	536	910	963	936	965
1984-1	589	877	1.030	905	966
FORECAST STARTS HERE					
1984-2	745	904	1.041	899	961
1984-3	920	886	1.046	904	960
1984-4	1.026	956	1.020	889	970
1985-1	1.036	992	1.053	871	986
1985-2	982	1.011	1.085	858	995
1985-3	1.027	1.007	1.101	871	997
1985-4	1.137	1.012	1.092	875	1.002
Nominal Values					
1976-1	55.657	470.3	1,558.958	1,146.470	861.896

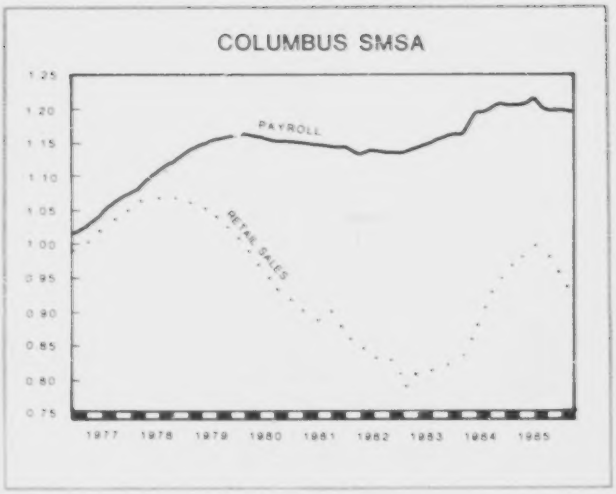


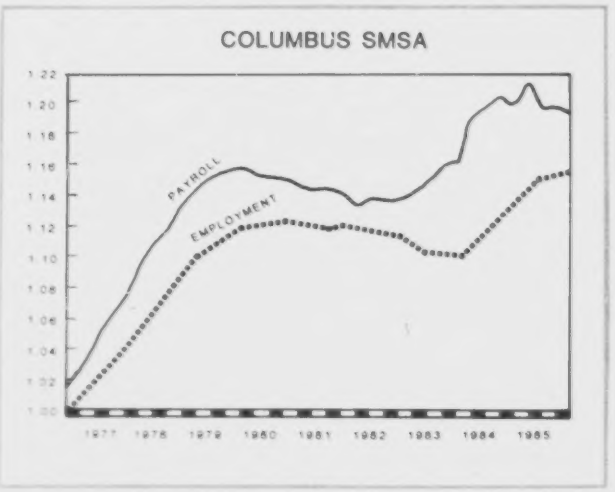


Appendix 5
Columbus SMSA

Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	936	946	1.003	945	997
1976-3	993	982	1.020	955	1.003
1976-4	965	970	1.038	1.000	1.011
1977-1	1.305	1.020	1.018	1.084	1.010
1977-2	1.355	1.059	1.056	1.099	1.031
1977-3	1.262	1.059	1.101	1.130	1.045
1977-4	1.326	1.066	1.086	1.169	1.048
1978-1	1.411	1.042	1.099	1.244	1.065
1978-2	1.397	1.095	1.126	1.281	1.084
1978-3	1.284	1.062	1.135	1.225	1.092
1978-4	1.270	1.065	1.146	1.200	1.104
1979-1	1.170	1.027	1.168	1.341	1.106
1979-2	1.291	1.012	1.153	1.929	1.111
1979-3	1.284	1.008	1.157	1.941	1.120
1979-4	1.149	964	1.155	2.059	1.126
1980-1	872	941	1.163	2.138	1.132
1980-2	596	889	1.141	2.071	1.123
1980-3	1.021	856	1.140	2.024	1.112
1980-4	1.085	932	1.155	2.020	1.125
1981-1	830	884	1.136	2.024	1.120
1981-2	617	845	1.146	2.016	1.120
1981-3	411	970	1.132	2.016	1.117
1981-4	206	669	1.139	2.179	1.121
1982-1	333	854	1.113	2.262	1.115
1982-2	418	818	1.150	2.304	1.113
1982-3	482	820	1.148	2.316	1.111
1982-4	681	761	1.130	2.468	1.096
1983-1	1.057	795	1.162	2.572	1.098
1983-2	794	859	1.160	2.589	1.102
1983-3	1.085	869	1.199	2.473	1.097
1983-4	1.050	890	1.157	2.666	1.110
1984-1	1.483	971	1.281	2.600	1.130
FORECAST STARTS HERE					
1984-2	1.270	1.050	1.193	2.899	1.139
1984-3	1.089	1.030	1.195	2.866	1.139
1984-4	956	953	1.176	2.828	1.163
1985-1	793	989	1.223	2.794	1.162
1985-2	776	888	1.199	2.914	1.154
1985-3	709	876	1.193	2.913	1.145
1985-4	785	845	1.180	2.873	1.149
Nominal Values					
1976-1	36.638	336.6	717.936	283.309	454.072





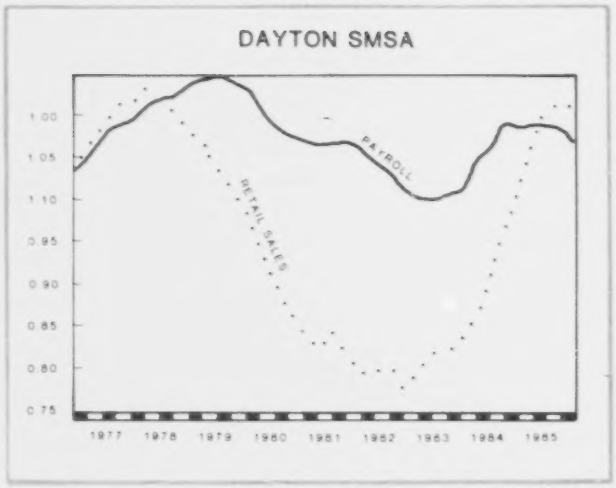
Appendix 6
Dayton SMSA

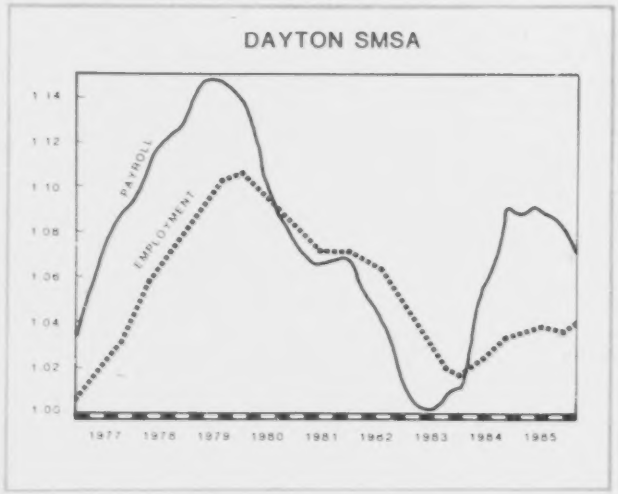
Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	.795	1.023	1.022	.956	1.001
1976-3	.669	1.043	1.040	.966	1.007
1976-4	.828	1.048	1.081	1.013	1.010
1977-1	1.278	1.060	1.028	1.044	1.017
1977-2	1.040	1.143	1.099	1.091	1.033
1977-3	1.000	1.136	1.128	1.083	1.048
1977-4	.940	1.158	1.106	1.085	1.052
1978-1	.801	1.064	1.109	1.153	1.064
1978-2	.960	1.159	1.121	1.196	1.077
1978-3	.987	1.079	1.136	1.161	1.087
1978-4	.874	1.055	1.147	1.157	1.098
1979-1	.834	1.048	1.181	1.194	1.111
1979-2	.828	1.007	1.149	1.140	1.105
1979-3	.682	.997	1.125	1.064	1.105
1979-4	.623	.952	1.114	1.013	1.106
1980-1	.411	.937	1.106	1.032	1.093
1980-2	.430	.810	1.056	1.015	1.079
1980-3	.497	.800	1.043	.949	1.069
1980-4	.517	.858	1.076	1.030	1.073
1981-1	.384	.822	1.069	.990	1.072
1981-2	.278	.836	1.084	.986	1.073
1981-3	.219	.895	1.071	.991	1.074
1981-4	.073	.664	1.050	1.013	1.067
1982-1	.245	.770	1.003	.964	1.059
1982-2	.172	.832	1.020	.984	1.050
1982-3	.185	.834	1.020	.948	1.051
1982-4	.270	.772	.960	.983	1.007
1983-1	.477	.800	1.010	.930	1.012
1983-2	.417	.858	.996	.915	1.015
1983-3	.305	.856	1.064	.846	1.020
1983-4	.305	.899	1.033	1.041	1.028
1984-1	.344	.904	1.136	.990	1.041
FORECAST STARTS HERE					
1984-2	.861	1.047	1.088	.962	1.045
1984-3	.939	1.071	1.138	1.088	1.031
1984-4	1.246	1.135	1.045	1.063	1.136
1985-1	1.179	1.207	1.047	1.125	1.037
1985-2	.995	1.097	1.120	1.127	1.040
1985-3	1.107	1.064	1.070	1.080	1.041
1985-4	.836	1.045	1.072	1.089	1.060

Nominal Values

1976-1	27.293	191.0	502.125	166.195	329.814

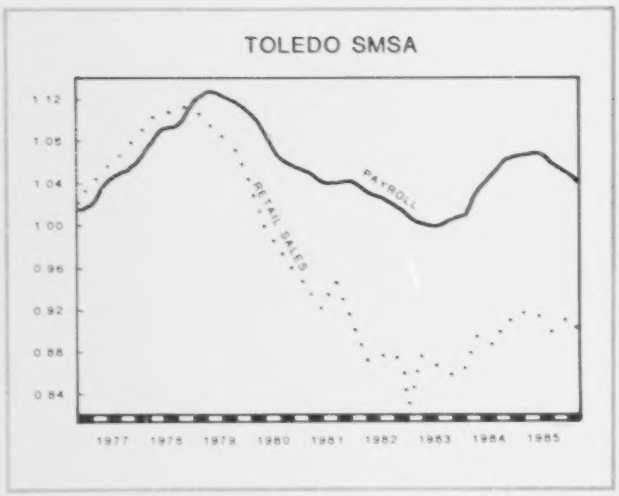


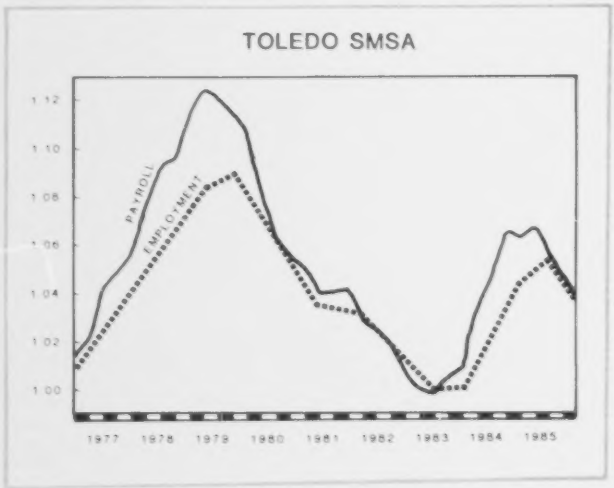


Appendix 7
Toledo SMSA

Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	853	1.007	994	1.027	1.005
1976-3	799	1.031	1.030	990	1.008
1976-4	951	1.022	1.036	1.000	1.009
1977-1	941	1.040	1.010	1.109	1.018
1977-2	1.078	1.093	1.033	1.032	1.034
1977-3	1.108	1.082	1.102	1.117	1.043
1977-4	936	1.090	1.065	1.120	1.049
1978-1	1.172	1.095	1.077	1.195	1.054
1978-2	1.196	1.124	1.104	1.184	1.062
1978-3	1.083	1.117	1.108	1.207	1.075
1978-4	1.064	1.102	1.124	1.214	1.085
1979-1	892	1.132	1.161	1.219	1.095
1979-2	1.020	998	1.123	1.186	1.092
1979-3	1.083	1.073	1.088	1.130	1.088
1979-4	770	1.044	1.074	971	1.083
1980-1	608	958	1.090	963	1.061
1980-2	525	899	1.040	894	1.036
1980-3	706	898	1.022	936	1.029
1980-4	1.010	984	1.051	914	1.033
1981-1	000	951	1.046	857	1.032
1981-2	549	843	1.041	856	1.040
1981-3	353	1.048	1.043	888	1.034
1981-4	230	704	1.024	896	1.023
1982-1	172	817	994	917	1.019
1982-2	377	971	1.020	937	1.012
1982-3	368	828	1.013	938	1.010
1982-4	304	830	982	826	993
1983-1	397	910	992	919	996
1983-2	525	797	985	912	994
1983-3	529	910	1.057	930	1.009
1983-4	441	863	1.031	992	1.016
1984-1	394	997	1.100	1.010	1.034
FORECAST STARTS HERE					
1984-2	470	846	1.066	990	1.046
1984-3	597	928	1.071	970	1.062
1984-4	647	944	1.047	958	1.060
1985-1	598	845	1.050	977	1.046
1985-2	539	917	1.043	983	1.055
1985-3	528	908	1.028	982	1.011
1985-4	563	888	1.016	961	1.004
Nominal Values					
1976-1	24.172	170.5	413.220	176.315	281.940

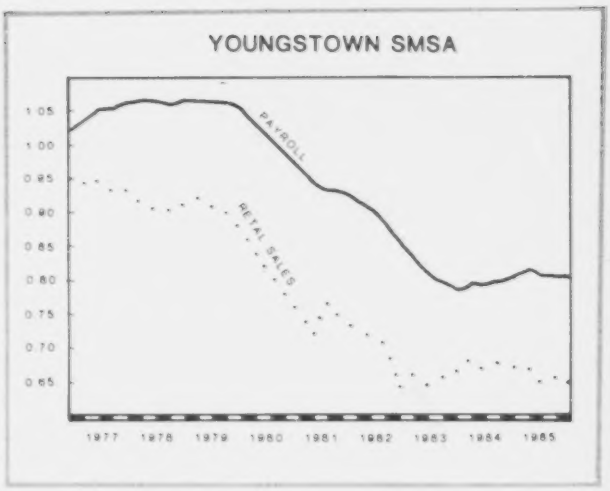


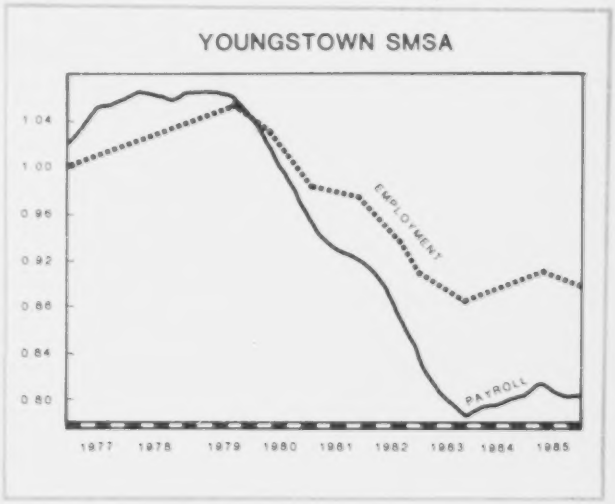


Appendix 8
Youngstown SMSA

Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	1.234	.923	1.011	1.033	1.000
1976-3	1.546	.935	1.035	1.000	.997
1976-4	1.752	.864	1.026	1.025	.992
1977-1	1.950	1.026	1.032	.991	1.008
1977-2	2.461	.955	1.068	.927	1.025
1977-3	1.504	.938	1.100	.914	1.028
1977-4	1.163	.866	1.044	.922	1.027
1978-1	1.844	.855	1.059	.951	1.019
1978-2	1.752	.934	1.056	.962	1.032
1978-3	1.638	.917	1.056	.953	1.042
1978-4	1.617	.923	1.076	1.042	1.047
1979-1	1.489	.897	1.075	1.058	1.053
1979-2	1.426	.914	1.059	1.107	1.051
1979-3	1.418	.877	1.053	1.078	1.055
1979-4	1.142	.883	1.047	1.051	1.054
1980-1	.518	.780	1.027	1.011	1.036
1980-2	.525	.723	.980	.982	.999
1980-3	.894	.733	.939	1.004	.978
1980-4	.986	.749	.947	.920	.976
1981-1	.943	.744	.917	.903	.978
1981-2	.688	.649	.929	.967	.986
1981-3	.397	.946	.922	.903	.982
1981-4	.291	.581	.920	.959	.964
1982-1	.234	.713	.896	.944	.942
1982-2	.376	.666	.858	.972	.926
1982-3	.355	.612	.826	.983	.913
1982-4	.440	.632	.789	1.014	.866
1983-1	.638	.673	.787	.967	.886
1983-2	.539	.619	.773	1.122	.892
1983-3	.553	.730	.798	1.216	.900
1983-4	.610	.656	.774	1.314	.883
1984-1	.501	.730	.836	1.120	.894
FORECAST STARTS HERE					
1984-2	.323	.566	.796	1.168	.912
1984-3	.562	.692	.794	1.230	.915
1984-4	.684	.698	.822	1.220	.909
1985-1	.115	.644	.827	1.187	.907
1985-2	.130	.601	.788	1.201	.892
1985-3	.572	.633	.787	1.175	.889
1985-4	.607	.650	.791	1.171	.904
Nominal Values					
1976-1	7,044	100.8	204,644	77,989	203,715





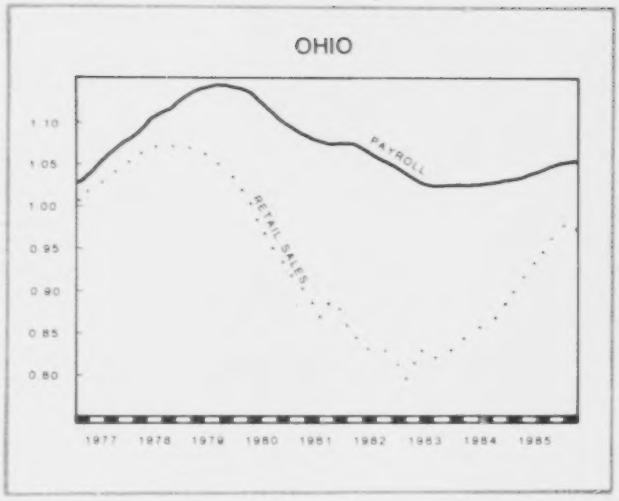
Appendix 9
Eight City Composite

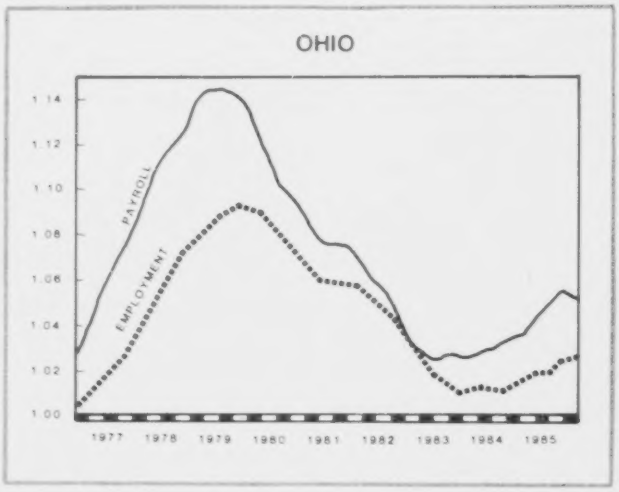
Historical Data and Forecasts

Leading Quarter	Housing Values	Retail Sales	Payroll	Commercial Loans	Employment
1976-1	1.000	1.000	1.000	1.000	1.000
1976-2	891	1.001	1.015	956	998
1976-3	909	999	1.027	959	1.001
1976-4	1.091	987	1.055	1.003	1.005
1977-1	1.273	1.028	1.027	990	1.013
1977-2	1.327	1.060	1.068	988	1.026
1977-3	1.352	1.071	1.108	1.013	1.037
1977-4	1.170	1.062	1.095	1.024	1.042
1978-1	1.364	1.050	1.107	1.085	1.052
1978-2	1.370	1.090	1.122	1.097	1.068
1978-3	1.297	1.073	1.133	1.076	1.076
1978-4	1.206	1.071	1.146	1.064	1.086
1979-1	1.103	1.053	1.169	1.078	1.091
1979-2	1.261	1.020	1.141	1.123	1.092
1979-3	1.012	1.014	1.131	1.120	1.096
1979-4	958	993	1.115	1.085	1.095
1980-1	630	954	1.129	1.073	1.088
1980-2	461	861	1.083	997	1.069
1980-3	709	871	1.064	970	1.056
1980-4	867	908	1.085	979	1.061
1981-1	648	873	1.073	934	1.059
1981-2	527	824	1.082	916	1.060
1981-3	376	966	1.068	891	1.057
1981-4	236	685	1.065	963	1.052
1982-1	297	819	1.033	991	1.044
1982-2	309	860	1.042	1.001	1.037
1982-3	345	810	1.040	1.028	1.032
1982-4	424	798	1.003	1.055	1.006
1983-1	655	826	1.022	1.081	1.008
1983-2	600	810	1.013	1.082	1.006
1983-3	606	891	1.057	1.055	1.015
1983-4	618	884	1.032	1.159	1.017
1984-1	569	868	1.010	1.176	1.014
FORECAST STARTS HERE					
1984-2	762	866	1.031	1.180	1.004
1984-3	998	927	1.035	1.146	1.009
1984-4	1.115	1.026	1.069	1.203	1.038
1985-1	1.164	991	1.068	1.223	1.026
1985-2	988	987	1.041	1.202	1.020
1985-3	1.148	955	1.062	1.163	1.029
1985-4	1.156	904	1.020	1.165	1.015

Nominal Values

1976-1	215,288	1,911.6	4,956,768	2,448,402	3,067,101





Ohio Regional Forecasts

One of the purposes of this journal is to provide information about the economies of the eight major regions of the state. In this first issue, we are providing overviews of 1985 for six of the eight regions (Akron and Canton were not available). In future issues, we will present more detailed information, provided by university economists in each region.

Cincinnati Metropolitan Area*

By Saul Pleeter
University of Cincinnati

The year 1985 should see continued growth for the Cincinnati/Metropolitan area. Although the rate of growth of Gross Regional Product will be 3.4 % compared with an estimated 5.6% rate of growth in 1984, this lowered growth is consistent with 1985 being the third year of an economic recovery.

Unemployment will continue to decrease and is estimated to average 7.5% in 1985. This is a significant change if one realizes that in 1982 the unemployment rate reached 12.3%.

Prices in the metropolitan area are forecast to increase at a rate less than the national average (4.0% compared with 4.5% for the nation) and only slightly higher than the estimated 3.7% for 1984.

Retail sales, auto sales, and housing starts are also forecast to grow at rates slightly less than those realized in 1984.

Personal income is also forecast to grow at a rate slightly less than the national average in 1985 (7.5% vs. 7.7%). In part this will reflect continued recovery in the goods producing industries.

In sum, the Cincinnati area is expected to follow the national trend of lowered rates of growth in 1985. Consumer demand should remain strong and barring any dramatic increases in interest rates, 1985 will be a year of continued recovery.

*The Cincinnati Metropolitan Statistical Area includes Hamilton, Clermont and Warren Counties, Ohio, Boone, Campbell and Kenton Counties, Kentucky, and Dearborn County, Indiana.

Cleveland Metropolitan Area*

By James M. Trutko
Greater Cleveland Growth Association

The Cleveland area economy should continue to show slight improvement in 1985 as the U.S. recovery from the recession moves into its third year. With a forecast annual national growth rate for real GNP in the 3% to 3.5% range in 1985, total employment in the Cleveland MSA should rise to the 840,000 level in 1985, up from an average of 828,000 in 1984.**

Employment in the manufacturing sector of Cleveland's economy will rise to 215,000 in 1985 from a 1984 level of 210,700. This modest growth will occur as national levels of industrial production rise by about 4% in 1985 (versus 1984 increase of 11.2%) and relatively strong capital spending for modernization continues to strengthen demand in Cleveland's producer durables sector.

The gains in the manufacturing sector will be limited, however, by several factors which will hold manufacturing employment far below the pre-recession (1978-79) level of 275,000. Total car sales in the U.S. are expected to drop slightly, curtailing the demand for appliances and other housing supplies important to Cleveland's manufacturing economy.

In the auto and housing-related sectors, and in several of the machinery and industrial equipment sectors, pressures for productivity improvement and for restraining total labor costs will mean that gains in manufacturing employment will come slowly, even if demand increases. The pressure is partly the result of strong international competition which has intensified in many industrial and consumer durables markets because of the strong U.S. dollar. A significant weakening of the U.S. dollar could mean sharp increases in demand for domestically produced durables, although gains may be limited to some degree by higher prices and interest rates.

As a result of some improvement in the local manufacturing sector and in local consumer income, employment in Cleveland's nonmanufacturing sector will grow slightly in 1985. Employment will rise to about

*The Cleveland Metropolitan Statistical Area (MSA) includes Cuyahoga, Geauga, Lake and Medina counties.

**1984 averages in this report are based on the ten month period January-October, and were the most current available at the time of publication.

625,000 (from a 1984 level of 618,000) which will still be below the historical high of 643,500 reached in 1979. The area's business service sector will continue to grow as it has, even through the recession. Some growth will come in the retail sector because low interest rates, the economic recovery, and the rise in real personal income have strengthened consumer confidence and the consumer's purchasing power. Gains in the retail sector and in the finance, insurance, and real estate sector will be limited by the efforts of consumer service companies to improve productivity, by the region's continued loss of population and by the area's unemployment rate which exceeds the national average.

Although health services employment has grown strongly over the past decade, reflecting increases in demand for health care, employment in this sector will probably stabilize (or even decline) in 1985 because efforts at cost containment by government and the private sector seem to be resulting in the facility consolidation.

Columbus Metropolitan Area*

By Henry L. Hunker
The Ohio State University

The Columbus MSA economy is more characteristic of the "post-industrial" society than that of any other major Ohio MSA. The Columbus MSA has differed from other Ohio MSA's historically in its commitment to public sector employment and related service activities. It supported a traditional industrial base, but the share of employment in manufacturing in the MSA did not compare with traditional industrial centers. In the last decade, these qualities were more firmly established as employment in manufacturing decreased from 29% of total employment in 1972 to approximately 19% currently. At the same time, service sector employment increased sharply. Since 1978, the Columbus MSA accounted for almost one-third of the 85,000+ new jobs created in the service sector in Ohio. Clearly, the Columbus MSA leads the national trend towards increased reliance upon service-producing employment and a decreased dependence upon goods-producing employment. The list of major employers reflects this: government, public education, financial services, insurance, wholesale and retail trade, and distribution. Closely related has been the city's growth as a regional and/or national headquarters for firms in insurance, banking and financial services, and fast foods.

These trends support the fact that the Columbus MSA has weathered the cyclical and structural changes in the economy reasonably well during the past ten years. With a more modest manufacturing employment base than other Ohio cities and with the absence of many facets of Ohio's heavy industrial economy (i.e., steel, basic chemicals, automobiles), the Columbus MSA has adapted more readily to the structural changes in employment reflected in an expanded service sector and was affected less severely by national cyclical trends than were other Ohio cities. Unemployment in the Columbus MSA, for example, has been lower, generally, than the state average (in late 1984, the Columbus/Franklin County unemployment rate of 6.7% was the lowest of any of Ohio's eight major MSA's), and it has been the only major urban area in the northeast to maintain population growth during the last twenty-five years. This experience, supported by an aggressive annexation policy, is weakening so that Columbus' growth rate — projected to be 0.3% per year through the rest of this decade — is stabilizing although population growth in the outlying MSA counties remains fairly dynamic.

Currently, the Columbus MSA is enjoying spirited growth. Continued expansion of its service-based economy is anticipated; the long-term future of manufacturing in the area is not clear at this time, however. New and planned construction in the Columbus Business District (CBD) mirrors the confidence in the city and region's future. In the 1970's, $685 million was invested in construction in the CBD; expectations are that in excess of $900 million will be invested in the downtown in the 1980s. With new office buildings, hotels, and related shopping facilities underway or in the planning stage, and with expansion and improvement of the city's cultural activities and riverfront development in progress, there is considerable optimism regarding Columbus's future.

*The Columbus Metropolitan Statistical Area includes Franklin, Delaware, Union, Madison, Pickaway, Fairfield and Licking Counties.

Dayton Metropolitan Area*

By John E. Weiler
University of Dayton

The Dayton economy performed very well during 1984. The unemployment rate fell from 8.8% (November 1983) to 7.4% (November 1984). Both manufacturing and nonmanufacturing employment increased. The recovery in the auto industry has been an important element in the manufacturing area. It is this recovery, rather than an expansion, which accounts for the increase in manufacturing employment during 1984.

1985 is likely to be a period of modest growth. The two major area employers, General Motors and Wright Patterson Air Force Base, are likely to maintain or increase employment. An increase in employment of 1,200 is expected when a second shift is added at GM's

*The Dayton Metropolitan Statistical Area includes Montgomery, Miami, Clark and Greene Counties.

Moraine truck plant. There is some promise of growth in high technology areas. However, this will not produce significant overall growth in manufacturing employment during the period.

Nonmanufacturing employment should rise slightly during 1985. One negative factor is a decline in the rate of expansion in retail sales and employment. One of Dayton's major clothing stores has gone out of business. There has been a modest influx of new retailers, but that will not be repeated in 1985.

Toledo Metropolitan Area*

By Michael Magura
University of Toledo

In addition to large service and retail sectors, the Toledo economy consists of many important manufacturing industries: transportation equipment, stone, clay and glass, machinery, fabricated metals, electrical equipment, primary metals, food, chemicals, and petroleum. The Ohio Bureau of Employment Services states that about one-third of the employed residents of the Toledo area work in factories.

Entering the decade of the 80s, the Toledo economy was besieged with difficulties: high unemployment, firms leaving the area, labor disputes, and declining government revenues. At the beginning of the decade, the unemployment rate stood at about 7%, approximately 350,000 people were employed, and $123 million of residential housing permits were authorized. During July 1980, the unemployment rate increased to 12.4%, mirroring the decline in national economic activity. The first half of 1981 witnessed an improvement in economic conditions only to be followed by a decline in the latter half. The valuation of housing permits authorized declined to $99 million in 1981. In 1982 unemployment reached 13.4% in March, declined slightly during the middle part of the year, and rose to a high for the year of 14.3% in December. The transportation equipment, stone, clay and glass, fabricated metals, and construction sectors were particularly hard hit. The valuation of authorized housing permits fell to only $63 million and overall employment in the area fell to a low of 306,000. Eroding local government revenues prompted layoffs and a request by local officials for a payroll tax rate increase, which was finally approved by the voters in June. During the early part of 1983, the unemployment rate continued to rise to an unprecedented 15% in March. The stone, clay and glass, transportation equipment, fabricated metals, and machinery sectors bore the brunt of the increased unemployment.

Although the period 1980 to 1983 brought difficulties to the Toledo economy, the latter half of 1983 witnessed a rebound. Downtown redevelopment was moving strongly ahead, the transportation equipment sector improved dramatically, fabricated metals likewise improved, as did many of the other sectors. As of the middle of 1984, the unemployment rate had declined to 9%. During the latter half of 1984, economic activity in Toledo remained relatively strong but had begun to level off.

For 1985, the usual first quarter downturn is expected to follow a rather robust fourth quarter of 1984. Much of the drop is expected to occur in the transportation equipment and retail trade sector. The second quarter portends a further but somewhat slower decline prior to some improvement in the third and fourth quarters. Overall, 1985 is expected to show the same slowdown in economic activity that is expected for the national economy.

*The Toledo Metropolitan Statistical Area includes Lucas, Fulton, and Wood Counties.

Youngstown-Warren Metropolitan Area*

By Anthony Stocks and Yih-Wu Liu
Youngstown State University

For the Youngstown-Warren economy, 1984 reveals a flat performance in manufacturing employment. The expected recovery in steel jobs never materialized as rising steel imports, stimulated by an inflated dollar and a sluggish world economy, kept the local steel industry in the doldrums. Similarly, the fabricated metals and machinery sectors suffered from rising imports and lagging exports during 1984. Among the local manufacturing sectors, only transportation equipment proved vigorous. However, there is considerable evidence that rising demand for products in this sector was met through increasing hours of work rather than hiring more workers. As a result, we overestimated employment in transportation equipment, but were very close to actual man-hours in our forecast of this sector. In the case of the nonmanufacturing sectors, employment rose by 5700 from the first to the fourth quarter of 1984. However, this growth is less than the long-run trend in nonmanufacturing jobs in the local economy suggesting that the "ripple effect" from the loss of manufacturing jobs in recent years is showing up as a constraint on these nonmanufacturing sectors.

What is the forecast for the Youngstown-Warren economy for 1985? The slower growth in the national economy is expected to produce a stagnant job market locally. Manufacturing employment is forecast to fluctuate very little in 1985, while virtually no growth is expected in the nonmanufacturing sectors when compared with similar quarters in 1984. As a result, we expect the official unemployment rate to remain in the 11% to 12% range in 1985 with any dips accounted for by net outmigration.

*The Youngstown-Warren Metropolitan Statistical Area includes Mahoning and Trumbull Counties.

Ohio's Changing Economy

By Richard Sheridan, Michael Sobul, Mark Hoffman, and Wilbur Thompson

Officials engaged in budgeting need to understand recent changes in Ohio's economy in order to make short-range revenue and expenditure forecasts and to prepare long-range capital and operating financial plans. Those involved in economic development need the same information in order to select development policies best able to nurture new businesses, foster existing businesses, or induce business relocation. Business interests are also searching for a view of the future, especially in the light of the prolonged decline wrought by the recession which began in 1980, the effects of which are still being felt as we approach another potential downturn in the economy.

Substantial economic changes have occurred in Ohio since 1978. This article describes, in general terms, some of the characteristics which influence the state's economic condition and selects two employment patterns for closer observation.

Although this article deals with the state as a whole, it is clear that the state is a collection of several regions with quite distinct economic characteristics. Future articles will be concerned with regional patterns of development.

The Economy of Ohio

Ohio is the sixth largest state, with a 1980 population of 10,797,630, and is densely populated (263 persons per square mile compared to a U.S. average of 64), with 80% residing in metropolitan areas.[1] But Ohio is not a big city state; slightly more than 40% of its total population lives outside of urban areas or in places with less than 10,000 residents. Less than 25% are in the seven cities with populations over 100,000. In the past 20 years, the state population has become less concentrated with populations in the seven major urban centers growing smaller and the inhabitants becoming increasingly dispersed throughout and beyond metropolitan areas.[2] During the period between 1970 and 1980 there was a growth of 7.1% in the population of unincorporated areas, thereby bringing their total population nearly equal to that of all 19 cities over 50,000 in population.

Not only is the population declining and moving out of cities, but jobs are also changing. Manufacturing employment has been steadily declining as a percentage of the total. Along with this change has come a decline in the rate of growth of payroll employment. Between 1959 and 1981 national employment grew by nearly 75%, but in Ohio the growth was less than 40%. This loss of high-paying manufacturing jobs has had a negative impact on personal income.

Ohio's rank in per capita personal income declined from tenth in 1950 to twenty-third in 1981. In the first quarter of 1984, national personal income rose 2.4% while Ohio's rose only 2.2%. This change has resulted in less taxable personal income and lower retail sales, thus providing less tax revenues.

In order to maintain a set standard of living, given lower per capita income, more persons in the household have had to work. Current statistics show that husband-wife households are increasingly likely to have two full-time wage earners. This has been reflected in the workforce: in 1960 31% of Ohio's workers were female; by 1980 the figure had risen to over 41%. However, there is a substantial gap between the incomes of men and women, even with the same education, age, and occupation. Women in Ohio earn 55 cents for every dollar earned by men, while nationally, working women earn 62 cents for every dollar earned by men.[3]

Another statistic important to the evaluation of Ohio's economy is the population level of educational attainment. The 1980 census shows that Ohio, with 67% of its adult population having completed high school, has performed a little above average (66.5%) in raising the level of mass education, reflecting its slightly above average income. But a parity level of income is apparently not a sufficient condition for achieving an average level of college graduates among the resident population, that most mobile segment of the labor force. Ohio, with 13.7% college graduates, falls far short of the national average figure of 16.2% (see Figure 1).

A draft study by Dr. Mark Salling of Cleveland State University reveals that 37% of Ohio's out-migrants are college graduates.[4] Almost half of those have moved to Southern or Pacific states (see Figure 2). More than any other single factor, the technological maturity and economic stagnation of the Ohio economy prompted the heavy net out-migration of college graduates, both by dampening interest and excitement in the kinds of work to be done here and slowing the promotion of this upward-bound population.

The role of higher education in providing research and development is of significance to state economic development.[5] The R&D function of universities is a critical element in establishing new businesses and promoting the development of new products. R&D also attracts new industries to an area, thereby providing for job creation, primarily in the "high technology" businesses.

Figure 1

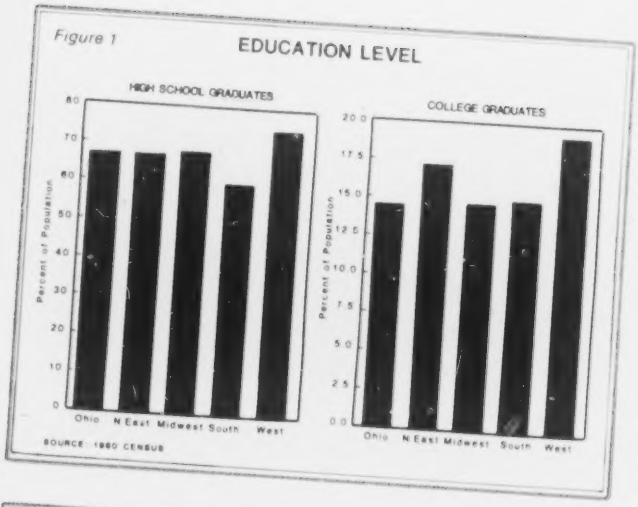


Figure 2

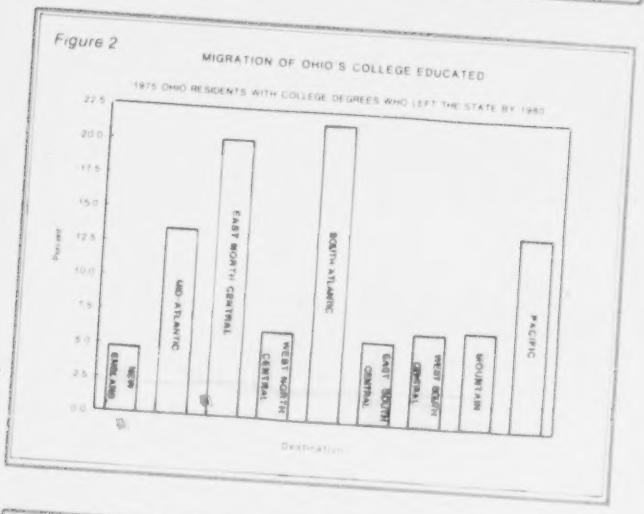
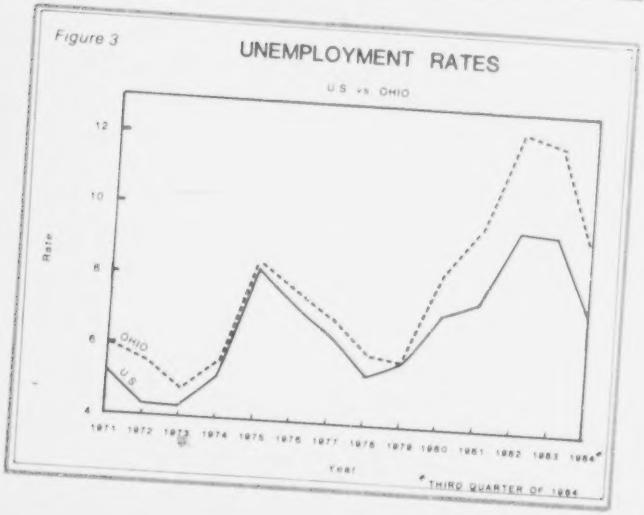


Figure 3



As a recipient of federal R&D funds, Ohio does comparatively poorly. According to National Science Foundation records for fiscal year 1981 (survey by *The Chronicle of Higher Education*), $4.4 billion was provided in federal obligations to 100 higher education institutions throughout the nation. Ohio receipts were only $110 million, or 2.5% of the total distribution. Funding from state and local governments, as well as industrial sources, has also been relatively low.

Traditionally, Ohio has had a lower unemployment rate than the nation, but since 1979, it has been higher. Figure 3 shows the nonagricultural unemployment rates for Ohio and the U.S. from 1970 through the third quarter of 1984.

This new pattern in the unemployment rate becomes significant when considering the other changes in the state and national economies. A study examining the six business cycles since 1945 showed a tendency for greater deviation in the Ohio economy than in the national economy.[5] After each downturn in the business cycle, Ohio's economy has not rebounded to previous levels, lagging the national recovery pattern.

Another economic problem is that the state is perceived to have a poor business climate. Utilizing factors such as the level of unemployment compensation benefits, the cost of employee benefits and wages, work stoppages, and tax structure, the Alexander Grant Company ranks the states each year. In the 1984 study (based on 1983 information) Ohio came out second to last as a place to do business. Ohio is downgraded more by its high wages and benefits and the effects of unionization than by its tax structures.

Given Ohio's poor business climate, it is not surprising that corporations in Ohio had less profits. In 1979 Ohio corporate tax receipts (a reflection of corporate profits) grew by 9.1% over 1978, while national profits increased by 15.9%; in 1980 the gap between the two grew wider, with national tax receipts growing by 14.3% and Ohio's by only 3.0%, and in 1981 Ohio receipts actually declined by 12.2%, when national profits decreased by only 3.8%.

An analysis of economic factors such as those described above was prepared by the United States Department of Commerce. If present trends continue (and that is an important "if"), the prediction is that Ohio's growth rate will be half that of the national average throughout the remainder of this century, with only Cincinnati and Columbus faring slightly better than the national average.

While the nation ended 1984 with about 10% more jobs than there were in 1978, Ohio had about 3.5% fewer. The study implies that Ohio's economic problems are structural rather than cyclical and the changes in the nature of its economy that have already taken place in the past two decades are likely to continue in the next two.

Within the context of this overview of the economy of Ohio, it is useful to consider two specific factors as they

help to explain the nature of the economic changes underway in the state. They are:

1. The relationship between the service and manufacturing sectors of employment in Ohio and other parts of the country, and compared to that in other states, regions, and the nation.
2. The growth or decline of "hi-tech" industries and "smokestack" industries in the state compared to other parts of the country.

Changes in Manufacturing and Service Sector Jobs

One of the major effects of the recession was the continuation of the long-term trend away from manufacturing-sector jobs toward service jobs. The accompanying tables and graphs show how it has hit Ohio compared to other parts of the nation and what the implications of this trend may be.

Nationwide, from 1978-1983, 9.1% of all manufacturing jobs were lost while employment in the services increased by 17.6%. In fact, in 1982, for the first time in history, more people were employed in the services (21.8%) than in manufacturing (20.5%).

The Midwest followed the national trend, but at much different magnitudes. In Ohio, the loss in manufacturing employment was 26.3% and the gain in service employment was only 13.6%, an overall net loss in total employment of 6.8%. This pattern was true in other Midwestern states, but not in other regions of the country (see Table 1).

The bright spot here, if there is one, is that Ohio suffered almost three times the national rate of decline in manufacturing jobs but still managed to achieve almost two-thirds of the national rate of growth in service work. This suggests that the strong trend to services overwhelmed the normal association between (export) manufacturing and (local-market-oriented) services, assumed to dominate their relationship in the conventional local multiplier theory. Either services are becoming more oriented to markets outside the local economy — "basic" in their own right — or local economies are becoming more self-sufficient through "import substitution growth" in services. We have not yet come to appreciate that the much heralded shift from goods to services — the "post-industrial age" — probably implies greater internalization of the local economy, at least in the larger ones. And an important corollary of this hypothesis is that (large) local economies simply may not need to find a new export job for each one lost, if they succeed in developing new service functions in their own local market, thereby retaining local dollars previously spent outside, whether for goods or services.

Table 1
Percent Changes in Employment
1978 - 1983

	Manufacturing Employment	Service Employment	TOTAL Employment
OHIO	(26.3%)	13.6%	(6.8%)
Midwest[1]	(22.1)	11.8	(6.8)
So. Central[2]	(6.9)	25.0	8.5
West[3]	1.9	20.7	8.0
U.S.	(9.1)	17.6	5.1

[1] *Ohio, Indiana, Illinois, Michigan, Wisconsin, Pennsylvania*
[2] *Alabama, Tennessee, Mississippi, Kentucky, Texas, Arkansas, Louisiana, Oklahoma*
[3] *All states south of the Dakotas and West of the Rockies.*

Table 2
Percent of Total Employment
Manufacturing & Service

	Manufacturing		Service	
	1978	1983	1978	1983
OHIO	31.5%	26.1%	17.6%	21.4%
Midwest	30.1	25.2	17.7	21.6
So. Central	22.0	18.9	16.1	18.6
West	17.8	16.8	20.6	23.0
U.S.	23.7	20.5	18.6	21.8

Table 3
Average Weekly Earnings in Ohio
Service and Manufacturing Sectors[1]

	Manufacturing	Service	Service as a % of Manufacturing
1978	$319	$183	57.4%
1979	347	201	57.9
1980	378	220	58.2
1981	415	243	58.6
1982	439	263	59.9
1983	465	276	59.4

[1] *Based on Payrolls Covered by Worker's Compensation.*

How well differing areas of the country have diversified between service and manufacturing employment has varied widely (see Table 2 and Figures 4-5). While more people are now employed in services than in manufacturing nationwide, the Midwest still has 725,000 more people employed in manufacturing than in services.

The effects of this structural change in the economy on state and local budgets becomes evident when one looks at comparative earnings in these two sectors. In Ohio, based on payrolls covered under worker's compensation, average weekly earnings in services is about 60% of those in manufacturing (see Table 3). Thus, the continued move toward service jobs and away from manufacturing jobs will significantly curtail growth in personal income throughout Ohio and the Midwest. This, in turn, will reduce taxable income (the source of payroll tax revenues) and disposable income (a key ingredient in retail sales and, thus, sales tax receipts).

Figure 4

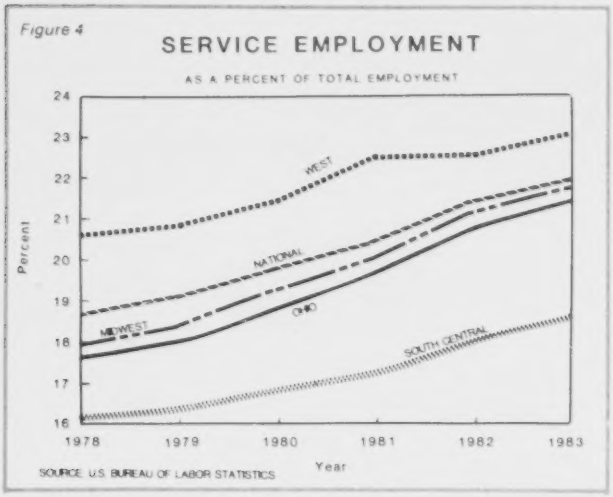
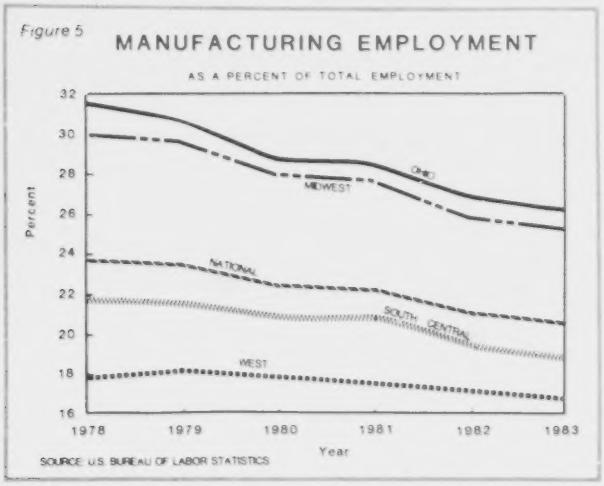


Figure 5



Given this continued trend, local governments will not be able to count on traditional growth rates in tax receipts over time. In addition, a new recession in the next couple of years would probably cause this structural change again to accelerate, further dampening long-term personal income growth in the region.

But still, there may be a slender ray of hope in Table 3, in the rising rate of service pay relative to manufacturing. Between 1978 and 1983 service average weekly earnings in Ohio rose from 57.4 to 59.4% of the manufacturing level, or roughly one half percentage point per year. At this rate, service pay could attain between two-thirds and three-quarters of the manufacturing level by the year 2000. If there is good reason to believe that Ohio has lagged in capturing the better service work and under today's stern challenge will catch up, the upper end of this range might prove to be the better forecast.

Further, when one recalls that manufacturing jobs and wage rates are subject to much more intense competition from low-wage countries, while service work is more protected by the naturally higher transportation costs of person movement, a case can be made that service pay may catch manufacturing pay by the turn of the century.

Smokestacks vs. High Tech

The transition from the traditional "smokestack" industries to the new "high technology" industries has attracted much public attention. There has been some concern that Ohio is lagging behind the nation in high tech development. Table 4 lists eleven industry categories characterized as high technology by the Bureau of Industrial Economics.[8] Five industry categories judgmentally selected as "smokestack" industries are also listed. The number of persons employed in each industry for years 1978 through 1982, compiled by the Bureau of the Census, is reported in the adjacent columns. In some cases estimates are used because of suppression of data by the Census Bureau.

After a decline during the recession of the mid-1970s, employment in high technology industries peaked in 1979 with 62,554 workers in Ohio. A slow, but steady, decline followed. In the period between 1978 and 1982, only in the categories of "Medical Instruments and Supplies" and "X-Ray Apparatus and Tubes" did a substantial increase in employment occur, up to 13% and 6%, respectively. However, the two largest categories, "Communication and Equipment" and "Measuring and Control Devices," experienced declines of 18% and 16%, respectively.

The smokestack industries also reached a peak in 1979, followed by a sharp decline. The most serious losses were in the primary metals industry, which lost 42,331 employees, and the motor vehicle industry, which was down 42,859 employees. The "tire and innertube" category lost 15,778 employees, or 80% of its 1978 total.

Figure 6 shows the percent change in employment from the base year of 1978. The smokestack industries had a sharp decline, down 29.3%, while employment in high technology industries fell 4.7% in the same five-year period.

Figure 7 shows that the Ohio pattern (described above) is not unusual for a midwestern industrial state. Similar patterns appeared in Pennsylvania, Illinois and probably Michigan. (The smokestack industry employment could not be calculated for Michigan because of constant suppression of the very significant motor vehicle category in that state.) However, the disturbing element here is that high technology industry experiences a substantial growth nationwide.

Table 4
Employment For Selected High Technology and Smokestack Industries in Ohio, 1978 to 1982

High Technology Industries	1978	1979	1980	1981	1982
Plastic Material and Synthetics	5,799	5,219*	4,639	3,921	4,527
Drugs	3,205	2,992	3,076	3,231	3,369
Office and Computing Equipment	5,382	6,601	6,654	6,201	5,467
Communications Equipment	10,661	11,837	11,457	10,285	8,701
Electronic Components and Acces.	8,070	8,705	9,045	8,065	8,892
Engineering and Scientific Instru.	1,271	1,436	1,551	1,656	1,456
Measuring and Control Devices	16,033	15,926	14,867	14,325	13,392
Medical Instruments and Supplies	4,566	4,634	4,887	4,999*	5,172
X-Ray Apparatus and Tubes	3,291	3,547	3,442	3,477	4,468
Optical Instruments and Lenses	1,181*	1,419	1,498*	1,578	1,224
Photographic Equipment and Supplies	731*	818	714	691	704
TOTAL	**60,190**	**62,554**	**61,830**	**58,459**	**57,372**

Smokestack Industries	1978	1979	1980	1981	1982
Tires and Innertubes	19,788	16,896	8,631	5,847	4,010
Primary Metal Industry	149,653	148,712	136,182	126,722	107,322
Farm Machinery and Equipment	3,586	3,136	3,499	3,022	2,127
Metalworking Machinery	50,313	53,415	54,880	51,877	47,851
Motor Vehicles and Equipment	126,459	135,160	104,326	97,047	83,600
Metal Forgings and Stampings	53,638	56,335	48,873	45,460	40,477
TOTAL	**403,437**	**413,654**	**356,391**	**329,975**	**285,417**

* Indicates estimates.

Source: U.S. Bureau of the Census, County Business Patterns, Ohio, 1977 - 1982.

Figure 6

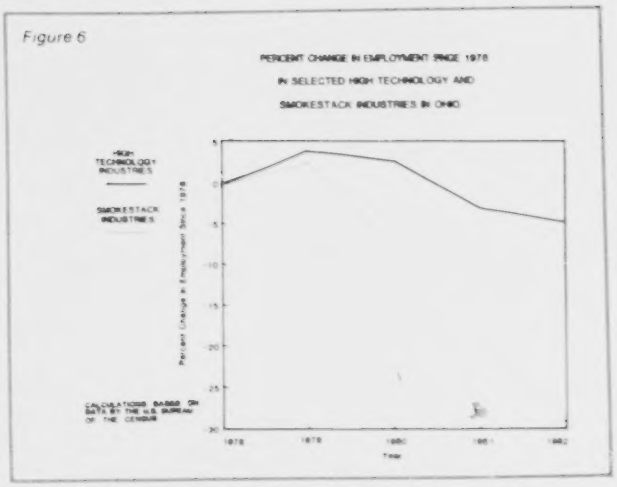


Figure 7

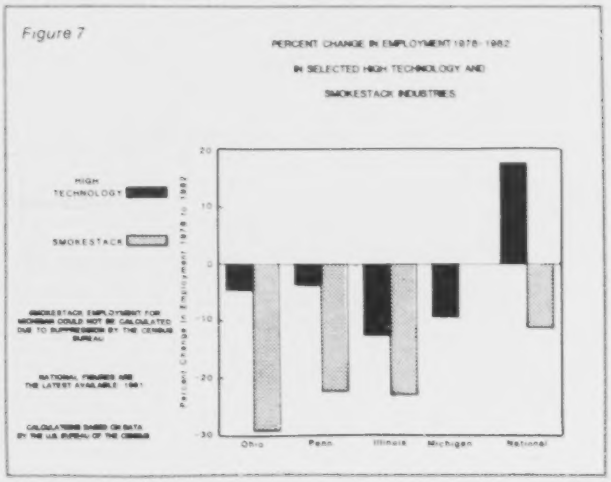


Figure 8

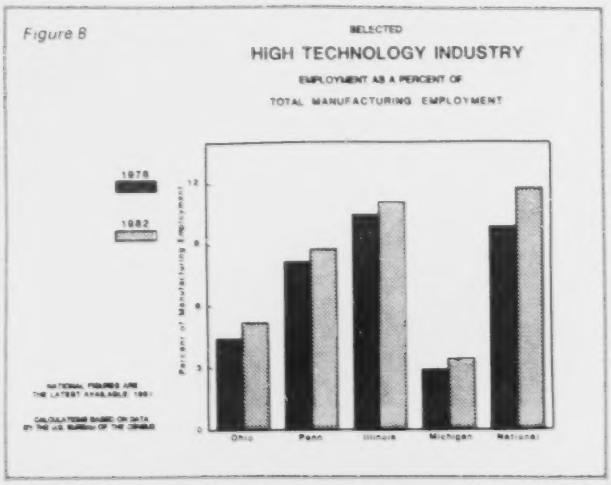


Figure 8 shows that employment in high technology industries makes up a relatively small percentage of the manufacturing employment totals in Ohio and Michigan. Pennsylvania and Illinois are much closer to the national average. Although this percentage increased in all four states during the five year period, this apparent growth was due more to the decline of other industries, such as the smokestack industries, than to the vigor of Midwestern high-tech activity.

The data seem to say that Ohio has experienced a double crisis. The effects of the declining smokestack industry are well recognized. However, the small size and lack of growth in the high technology industries may foreshadow further economic problems for Ohio as the twentieth century draws to a close.

Conclusion

This article only begins to discuss some of the important considerations vital to public and private policy making. For those concerned with the allocation of public financial resources, long-range thinking and planning in the light of the economic environment is essential. In the short run it is also useful in that it will help to explain why revenues are not coming into the treasury as planned or expected and why certain kinds of expenditures are increasing. In brief, then, it is hoped that more research and analysis into the various characteristics influencing Ohio's economy will be undertaken so that those concerned about planning the future will have a clearer sense of direction.

Notes

[1] Data used in this section are compiled from various reports of the U.S. Bureau of the Census, the Data User Center of the State Department of Development, the state Bureau of Employment Services, and the U.S. Bureau of Labor Statistics. Specific references to each statistic are omitted to facilitate readability.

[2] Data about the shifts in Ohio's population are taken from John J. Gargan, Department of Political Science, Kent State University, unpublished paper, "Urban Revitalization and Vitalization, Testing Ohio's State and Local Government Capacity," December 1982. The paper is an excellent study of the factors contributing to economic decline in Ohio and also makes the case for state and local government cooperation to achieve urban revitalization and vitalization.

[3] Robert J. Van Der Velde, "The Female Income Gap, Preliminary Observations," Cleveland State University, The Northern Ohio Data and Information Service, December 1983.

[4] Mark Salling, "Draft Mobility Study," Cleveland State University, College of Urban Affairs, unpublished working paper, November 1984.

[5] Richard G. Sheridan, "Ohio Tomorrow: State Economic Growth and Development and the Role of Higher Education," Cleveland State University, College of Urban Affairs, n.d.

[6] Robert F. Premus, "The Long Run Growth and Cyclical Stability of Ohio's Economy," Wright State University, Department of Economics, unpublished paper, 1981.

[7] Ohio Legislative Budget Office, "The Regional Nature of the Recession," Columbus, 1982.

[8] U.S. Department of Commerce, "1984 U.S. Industrial Outlook," Washington, D.C., January 1984.

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Richard G. Sheridan is an Urban Scholar in the College of Urban Affairs and a faculty member in the Department of Urban Studies at Cleveland State University. From 1973 until his appointment at CSU in 1982, he directed the Ohio Legislative Budget Office.

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